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BOARD OF DIRECTORS AND THE PRICING OF INITIAL PUBLIC OFFERINGS (IPOS): DOES THE EXISTENCE OF A PROPERLY STRUCTURED BOARD MATTER? EVIDENCE FROM FRANCE

Anis MNIF

University of Sfax

High School of Commerce

Airport Road

Sfax, Tunisia

Tel: 00 216 99950125

E-mail: anis.mnif@fsegs.rnu.tn

Abstract

The purpose of this study is to introduce the board of directors as a signal of firm quality to abate information asymmetry. This study is based on agency theory and signaling theory to suggest that the existence of properly structured board at the time of the IPO may signal high firm quality to potential investors. To do that, I examine the association between board of directors' characteristics (including board composition, board size, leadership structure (CEO duality) and existence of an audit committee) and underpricing of 133 Initial Public Offerings (IPOs) in France between 2000 and 2004. Empirical evidence suggests that there is a positive effect of board size on underpricing and a negative association between the proportion of independent directors and underpricing. However, CEO duality as well as existence of an audit committee have no significant impact on underpricing. Overall, these results are consistent with the assumption that board attributes may be used as a signal of firm quality.

Key words: Board of directors, Signaling theory, Agency theory, Initial Public Offerings, Underpricing

1. INTRODUCTION

At the time of an initial public offering (IPO), the entrepreneur seeking financing has typically private information about the future prospect of the firm, while potential investors have little information about it. The entrepreneur must use a suitable mechanism to overcome this information asymmetry; otherwise, he will give rise to the adverse selection problem described in Akerlof (1970): investors will value all IPOs at the average value. As a result, entrepreneurs with firm values higher than the average will withdraw from the market and the average of the remaining firms seeking financing will fall. This process will continue until the entrepreneur of the lowest firm value is the only one remaining in the market. To avoid adverse selection problem, the signaling perspective suggests that entrepreneurs of higher valued firms are, therefore, motivated to find a mechanism to communicate credibly their private information to potential investors.

Extant research has widely applied signaling theory to address this information asymmetry dilemma. Signaling theory suggests that certain indicators provide signals to potential investors about the capabilities of the IPO firm and therefore the likely future value of the firm. Research reports that credible communication outlining important information at the time of an IPO can reduce the information asymmetry between IPO issuers and investors. The basic idea of these studies is that due to the newness of the firm to the equity market and the absence of alternative sources of information, the valuation of initial public offerings by potential investors will mainly depend on the net assets of the business and the earnings and cash flows generated from those assets. The prospectus, inviting the public to subscribe to the issue, contains information on the assets, historical profitability, economic prospects, and investment plans. In order to add credibility to these basic valuation parameters, entrepreneurs will adopt strategies and disclose data that signal their private knowledge about the firm. The success of the signaling strategy chosen by the entrepreneur depends very much on the credibility of the information communicated, as perceived by investors.

The first models focus on the role played by the firm financing policy (ownership retained, debt, dividend policy) and by underpricing as a signal of firm quality. Then, as an extension of these signaling mechanisms, the role of third parties in mitigating information asymmetry between entrepreneurs and potential investors at the time of an IPO has been well documented in the accounting and finance literature. The formal certification hypothesis first presented in Booth and Smith (1986) subsequently led to the development of several models. A related body of empirical work has examined how investment bankers/underwriters (Beatty and Ritter, 1986; Carter and Manaster, 1990) auditors (Beatty, 1989; Michael and Shaw, 1995) and venture capitalists (Megginson and Weiss, 1991) help resolve the information asymmetry inherent in the initial public offering (IPO) process.

The growing interest in corporate governance was stimulated by the startling evidence of the failure of some famous companies over recent history. Early examples include Rolls Royce in Britain and the Bond Corp in Australia. More recently, the collapse of HIH insurance and Ansett Australia airline in Australia, and Enron in the USA have refocused attention on this issue. The impact of these business events force a radical reassessment of how companies are directed. It is widely accepted that good corporate governance systems are associated with better corporate value, and is also a key element in corporate competitiveness and access to capital (Jensen and Meckling, 1979; Shleifer and Vishny, 1997). A well-functioning corporate governance structure can not only protect shareholder's investment, but also motivate those

entrepreneurs to maximize the wealth of investors (Charreaux, 1997; Hung, 1998). Sanders and Boivie (2004) suggest that corporate governance parameters can serve as useful screening and sorting criteria that influence investors' valuations of the IPO firm when primary information sources are limited or obscure. The board of directors is one of a number of internal corporate governance mechanisms that are intended to ensure that the interests of shareholders and managers are closely aligned (Shleifer and Vishny, 1997; Hung, 1998). The board of directors, which represents one of these mechanisms, ensures that the information communicated before the issue is credible. A properly structured board can then have a certifying effect on firm value, similar to the certification effect of underwriters, auditors, or venture capitalists. In other words, high quality boards of directors can convey the intrinsic value of the firm (certify the firm's value) more credibly to potential investors, thus reducing the information asymmetry facing the issuing firm, resulting in lower under pricing in the IPOs of these firms. However, the relationship between the quality of board of directors and under pricing has so far received little attention in the literature. The objective of this essay is to remedy this gap in the literature.

The purpose of this study is to introduce the board of directors as a signal of firm quality. To do that, I empirically examine the association between board attributes and underpricing. I hypothesize that the board attributes advocated by the agency theory can minimize the extent of underpricing at initial public offering (IPO) by certifying the quality of financial disclosure contained in the prospectuses and thereby reducing the level of ex ante uncertainty and mitigating information asymmetry. This conjecture is based on signalling theory, which suggests that firms send signals to reduce information asymmetry.

To do that, I empirically examine the relationship between board of directors' attributes (board independence, board size, and board leadership structure) and under pricing for 133 Initial Public Offerings (IPOs) in France between 2000 and 2004. In this study, I choose France as the research setting, a less developed IPO market compared with that in UK and US (Chahine et al., 2007), which can add insights to the understanding of signaling mechanisms, especially in an environment outside of the United States. Furthermore, I choose the French IPO firms as the sample in this study because the information asymmetry and the agency conflict are especially severe in France because of its poor legal investor protection (La Porta et al., 1999). In addition, France is a country characterized by concentrated ownership and large private benefits of control (Roosenboom and Schramade, 2006). In particular, Fanto (1998) documents that French managers have a responsibility to serve social interest rather than shareholder interest. Alcouffe (2000) argues that this principle of social interest increases managerial discretion and encourages the owner-manager to pursue his own interests, usually at the expense of minority shareholders.

The reminder of the paper is organized as follows. The next section presents the relevant literature as well as our research hypotheses. The third section explains the research design and methodology employed to test the research hypotheses while the fourth presents and discuss the empirical findings. The final section provides the concluding comments.

2. LITERATURE REVIEW AND HYPOTHESES

Rock (1986) and Beatty and Ritter (1986) explain the under pricing phenomenon by the existence of information asymmetry between informed and non-informed investors. According to Rock (1986)'s model, there are two classes of investors: informed and non-informed investors. Both informed investors class and on-informed investors class are assumed to exist in the IPO market. The informed investors, having learned the true firm value through costly information search activities, will only subscribe to issuers that they know to be under priced, whereas the non-informed investors will subscribe to all issues based on the information they possess. As a result, the non-informed investors face a winner's curse: if a non-informed investor is allocated shares in an IPO, there is greater than usual chance that the offering will start trading at a discount. In other words, for a non-informed investor, the expected return conditional upon being allocated shares is less than his expected return conditional upon submitting a purchase order. But an informed investor will participate in the market only if the expected return, conditional upon being allocated shares, is non-negative. Therefore, in order to secure the non-informed investors' participation (without which the market for IPOs will fail) issuers must then under price their shares to ensure that non-informed investors' expected return conditional upon being allocated shares is non-negative. By using a sample IPO data set from 1977 to 1982, Beatty and Ritter (1986) find evidence that the ex ante uncertainty about the offer price of an issuing firm is positively related to its expected under pricing.

In this context of information asymmetry, the presence of a properly structured board of directors may reduce the level of underpricing that IPO firms have to maintain to attract this category of investors. The presence of an effective board of directors is indeed likely to reduce the probability of errors or irregularities in the firm's financial statements. The information contained in firm's financial reports is then more precise and credible for firms possessing an effective board. Because of this, the non-informed investors are in a position to estimate more precisely the distribution of the firm value, thereby reducing the level of ex-ante uncertainty.

The effectiveness of board of directors depends mainly on board structure. Specifically, board size, the proportion of independent directors on the boards, the separation of CEO/chairman positions (Zahra and Pearce, 1989; Johnson et al., 1996) as well as the existence of an audit committee have been used as indicators of board effectiveness.

Based on agency theory, several studies show that the effectiveness of board can be a device to improve investors' perception of the reliability, the precision, and the credibility of information published by firms. Beasley (1996) investigates the association between board composition and financial statement fraud among a sample of 75 "fraud firms" and 75 "no-fraud firms" matched by stock exchange, size, industry, and time period. The author finds that the likelihood of financial statement fraud is inversely related to the fraction of outside directors serving on the board. Dechow et al. (1996) find that firms with a large percentage of non-executive members are less likely to be subject to accounting enforcement actions by the SEC for alleged GAAP violations. Peasnell et al. (2000) provide UK evidence of less income-increasing earnings management to achieve target earnings by firms whose boards comprise a higher proportion of outside directors. In a similar vein, Klein (2002) examines the role of the board of directors in mitigating opportunistic earnings management by US firms. She finds

negative relations between board independence and abnormal accruals. This finding implies that financial statement information is likely to be informative for firms that use more outside directors to supervise managers' actions. Bushman et al. (2004) examine the linkage between corporate governance mechanisms and earnings timeliness and report that timeliness (a characteristic of decision usefulness) improves with the use of outside directors on the board. In terms of earnings informativeness, Vafeas (2000, 2005) argues that the corporate boards which are dominated by insiders are expected to compromise the quality of financial reporting. In contrast, a higher number of outside members on the board increases the likelihood that the quality of financial information will be monitored more effectively and that this will be reflected in higher informativeness of earnings, as measured by the relation between share returns and accounting earnings.

Furthermore, according to the agency theory, small corporate boards are more effective monitors than large boards because they have a high degree of membership coordination, less communication difficulties and a lower incidence of severe free-rider problems. Using a sample of 452 US firms, Yermack (1996) shows that companies with smaller boards have high market values. Similarly, Eisenberg et al. (1998), based on 870 Finnish firms, find that larger boards are associated with a lower market value. With regard to earnings informativeness and board size, Vafeas (2000) provides evidence that the returns-earnings relation is greater for the firms with smaller board size. More recently, Ahmed et al. (2006), based on 604 NZ firms, find that earnings informativeness, as measured by returns-earnings relation, is negatively related to board size.

Moreover, the separation of CEO and chairman positions increases the board's potential strength and power to control opportunism (Jensen and Meckling, 1976; Eisenhardt, 1989; Fama and Jensen, 1983). Separation of the two positions is also an indication that boards can provide more objective evaluation of the firm and thus improve boards' advice quality. Furthermore, Hung (1998) reports that having an outsider chairing the board increases the board's legitimacy and eventually impacts the firm's overall level of legitimacy. Dechow et al. (1996) provide evidence that firms whose CEO chairs the board of directors are more likely to be subject to accounting enforcement actions by the SEC for alleged violations of GAAP, while Park (1999) shows a positive link with the existence of litigation against the auditor. Maury (2006) suggests that board structure significantly affects the disciplining of the CEO. Specifically, the findings show that the separating of CEO and Chairman role is associated with higher CEO turnover following low stock price performance. The results on board structure are consistent with the argument that increased independence in the board structure increases the disciplining of poorly performing CEOs.

Finally, the reports (Viénot, 1995, 1999) indicate that the role of audit committee flows directly from the board oversight function. A key element of board oversight includes ensuring that quality accounting policies are in place to promote accurate, high quality and timely financial disclosure to the shareholders.

For this reason, the existence of an audit committee at the time of IPO is expected to increase investor confidence about the quality of current financial information. Indeed, Wild (1994) finds that the earnings of US firms which created an AC between 1966 and 1980 are significantly more informative to financial market participants after creation of the AC than

before. This finding is consistent with the notion that the presence of an AC improves the shareholders' perception of earnings quality. Yee (2006) shows that poor earnings quality increases the firm's fundamental risk for investors, which prompts them to require a higher risk premium for investing in the firm. Beatty and Ritter (1986) show that there is a positive relationship between ex ante uncertainty and underpricing. Thus, if the existence of an AC increases the earnings and financial disclosure quality, it should reduce the ex ante uncertainty about firm value and thus reduce the level of underpricing required by potential investors.

Based on the arguments and empirical findings of prior research, the choice of an appropriately structured board should inform the potential investors that the objective of the maximization of firm value is well respected, that the firm will be managed in accordance with their interests after the introduction to capital market. Consequently, the uncertainty regarding the firm's future value is reduced.

If the presence of an appropriately structured board gives a better guarantee to the potential investors, this effect may be voluntarily used by the entrepreneurs who like getting his firm to public. The entrepreneurs of a high-quality firm should convey credibly their favorable private information about the actual firm situation and its development perspective to potential investors. The choice of an appropriately structured (high-quality) board of directors is then considered as a part of signaling mechanisms. The entrepreneurs are motivated to choose the level of the board of directors' quality corresponding to the nature of the private information they hold. Through the clear identification of the board of directors' structure, potential investors can better rely on the information, contained in the prospectus, on the assets, historical profitability, economic prospects, and investment plans. The investors are then capable of inferring that an entrepreneur who chooses a high-quality board must have favorable information concerning the quality of the issue.

According to the signaling theory, to be credible, the signal must be observable and known in advance and must be costly to imitate (Spence, 1973).

The characteristics of the board of directors of a firm are an observable and easy-to-notice piece of information from an IPO prospectus. The IPO prospectus provides detail about a company's board size, its composition and its leadership structure and so has the potential to capture investors' attention at the time of the IPO event. Prospectuses are widely used by potential investors and their reference groups (e.g., analysts) to estimate the likely value of the firm (Firth et al., 1998). Additionally, the choice of an effective board could not be imitated by an entrepreneur holding unfavorable information. This one would indeed run an important risk as an efficient board could detect and reveal the real situation of the IPO firm more easily.

Having identified the characteristics of a credible signal, how can a firm determine whether it has been successful in signaling board of directors from an IPO event? To date, most of these studies examine the effect of signaling mechanisms on the first day of initial returns (i.e., under pricing) as an indicator of whether or not the signal has reduced information asymmetry between potential investors and entrepreneurs (Megginson and Weiss, 1991; Carter et al., 1998). These studies justify the first day returns based upon market efficiency theory, which suggests that the market responds immediately to information.

In this study, following the previous studies, I propose that the credible communication of board of directors will result in a very small gap between the offer price and the closing price on the first day of trading and, therefore, very little under pricing.

If the choice of the board attributes advocated by the agency theory is considered as a part of signaling mechanisms, I expect the variables over which the choice of board structure are made to affect under pricing in a manner similar to that of other signaling variables. I therefore propose the following hypothesis:

H1: Board size is positively associated with under pricing.

H2: Board independence is negatively associated with under pricing.

H3: The separate board leadership structure is negatively associated with under pricing.

H4: The existence of an audit committee at the time of the IPO is negatively associated with underpricing.

3. RESEARCH DESIGN AND METHODOLOGY

As mentioned above, the aim of this study is to investigate the role of board attributes in signaling the quality of firms undertaking initial public offerings in France. More specifically, I examine the impact of board attributes on underpricing in France. The board characteristics examined are board size, board composition, board leadership structure, and audit committee existence.

This chapter outlines the research design and methodology employed in this study to test the research hypotheses developed in the previous chapter. First, I present the sample of firms as well as the data collection method used in this study. Second, I discuss the variables and their respective measures. Finally, I describe the research model.

3.1. Sample and data collect method

The sample of firms for this study includes firms that went public from January 2000 to December 2004 and were traded on Euronext Paris. The firms are identified from the annual reports published by the "Commission des Opérations de Bourse" and the "Autorités des Marchés Financiers". During this period, 292 firms made initial public offerings. Out of those 292 IPOs, I exclude 112 IPOs because of the lack of accessible information, mergers and acquisitions (9). Eight firms that transferred from a market to another, and sixteen firms that previously traded on a foreign stock market are excluded. I drop 14 financial services firms because their corporate governance attributes and regulation are different from those of other IPO firms.

Finally, I exclude from our sample aberrant observations which are likely to bias the results of the multivariate analysis. To do that, I use two criteria to identify these aberrant observations which are: the deleted residue and the cook distance. The computation of these two criteria for all firms in our sample leads to eliminate 3 firms from the study.

Then, the data set for this study is composed of 130 firms. The following Table 1 describes the procedure for sample constitution.

Table 1: Procedure for sample constitution

Sample	Number of firms
Initial public offerings on Euronext Paris during 2000-2004 period (139 in 2000; 65 in 2001; 34 in 2002; 17 in 2003; 37 in 2004)	292
Firms excluded because of the lack of accessible information (prospectus missing, information missing)	112
Mergers and acquisitions	9
Foreign firms	16
Firms belonging to financial industry	14
Transfers	8
Aberrant observations	3
Finale sample	130

All information about corporate governance as well as the characteristics of the issuers are hand-collected from the IPO prospectuses which are collected from either the Authority of Financial Market (AMF)'s web site or the firm's web site itself. Market prices were collected from Yahoo Finance database.

3.2. Research Model

Our major research question is to identify whether board attributes serve as a signal of firm quality in France. In other words, whether board attributes significantly explain the level of underpricing of French IPOs. A range of hypotheses relative to board of directors are tested in this study. To do that, regression analysis are used to model the relationship between underpricing and a selection of board of directors and control variables. Underpricing is regressed on the board attributes, the factors which are likely to influence the securities pricing process (auditor quality, ownership retained, underwriter reputation) as well as factors which are considered as proxy for ex ante uncertainty (firm size, firm age, financial leverage, offer size).

According to the evidence and explanations provided above, the model of this study is displayed as follows:

$$\text{UNDRIC} = \beta_0 + \beta_1\text{BSIZE} + \beta_2\text{INDEAD} + \beta_3\text{DUALITY} + \beta_4\text{AC} + \beta_5\text{AUDITQ} + \beta_6\text{RETEN} + \beta_7\text{AGE} + \beta_8\text{FSIZE} + \beta_9\text{OSIZE} + \beta_{10}\text{UNDWR} + \beta_{11}\text{LEV} + \beta_{12}\text{MARK} + \varepsilon \quad (1)$$

Where

- UNDRIC represents the level of underpricing. It equals to $(P_1 - P_0) / P_1$

where P_1 : closing price on first day of trading

P_0 : offering price

- BSIZE is the number of directors on the board of directors.

- INDEAD is the proportion of independent directors on the board.

- DUALITY: Categorical variable that equals 1 if the CEO is also the chairman and 0 otherwise.

- AC: Categorical variable that equals to 1 if the firm has an audit committee at the time of the IPO and 0 otherwise.

- RETENT: Proportion of shares retained by the founders, the managers, and their families after IPO.

- AUDITQ: Categorical variable that equals to 1 if one of the auditors at the time of the IPO is one of a Big 5 firm (highest quality), and 0 otherwise.
 - UNDWR: Categorical variable that equals to 1 if the underwriter is one of the following banks: CREDIT LYONNAIS, CERDIT AGRICOLE, BNP, BANQUE POPULAIRE, and 0 otherwise.
 - AGE: Number of years from the foundation to the IPO.
 - FSIZE: Firm size, was measured by the natural log of pre-IPO total assets.
 - LEV: book value of total debts divided by book value of total assets.
 - OSIZE: The natural log of gross proceeds from the IPO.
 - MARK: Categorical variable which equals 1 if the firm initially lists on the "Marché Libre", 2 if the firm initially lists on the "Nouveau Marché", 3 if the firm initially lists on the "Second Marché", 4 if the firm initially lists on the "Premier Marché".
 - β_i : represents the regression coefficients.
 - ϵ : is a standard error term of an OLS regression.
- The empirical model is estimated using Ordinary Least Square (OLS).

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Descriptive statistics

The following Table 2 reports the descriptive statistics of the endogenous variable level of underpricing. Our results confirm the existence of the underpricing phenomenon on Euronext Paris between 2000 and 2004. Indeed, I observe a level of average underpricing of 12.02 % on the first day of listing.

Tableau 2: Descriptive Statistics for Underpricing

Variable	UNDP RIC
N	130
Mean	.1201623
Median	.1103
Standard deviation	.0945336

The level of underpricing of firms in our sample appears to be slightly lower than that noticed in previous French studies. Indeed, Ginglinger and Faugeron-Crouzet (2002) establish an average underpricing of 18 % on 292 observations between 1983 and 1994. Broye and Schatt (2003) find an average level of underpricing of 20.3% on a sample of 402 admissions between 1986 and 2000. This finding may be explained by the differences in sampling particularly by taking into account in our sample recent years of listing (2000-2004). In fact, using 185 French firms undertaking IPO between 1994 and 2000, Labégorre and Boubakri (2005) notice that, an average, these IPO firms are underpriced by about 14.7 %. The authors show that the level of underpricing increases over the period 1994-1996 and decreases afterwards (1997-2000) to reach low levels of underpricing.

4.2. Multivariate analysis

In our study, to verify the absence of multicollinearity between these variables, I use the matrix of Pearson correlations. To assess the absence of multicollinearity between the explanatory variables, Kennedy (1985) suggests that the coefficients of correlation must be lower than 0.8.

From the results reported in the Table 3, I notice that all the coefficients of correlation present values lower than 0.8. Therefore, I can draw the conclusion that the problem of multicollinearity between the continuous explanatory variables does not exist.

To verify whether the disturbance terms are homoscedastic, I perform the test of White (1980). It consists in regressing the squared residuals on all distinct regressors, the squared values and the cross products of regressors. The test statistic, a Lagrange multiplier measure is distributed chi-squared (p) under the null hypothesis of homoscedasticity. If p -value of the assumption of the coefficients are equal to 0 is superior to 10 %, I can not reject the null hypothesis and confirm that the coefficients are different from 0. So, I can say that the residuals have the character of homoscedasticity.

In our case, the results show that residuals are homoscedastic. Indeed, the statistics of chi-square presents a value of 77.3928 with a level of significance of .5301.

Then, the results of the specification tests show that the adoption of the method of Ordinary Least Square (OLS) seems to be adequate. I, in what follows, use this method in the analysis of the regression.

Table 3: Matrix of Pearson correlation

	BSIZE	INDEAD	DUALITY	RETENT	AGE	FSIZE	AUDITQ	UNDWR	LEV	MARK	AC	OSIZE
BSIZE	1.000											
INDEAD	,358***	1.000										
DUALITY	-,043	-,347***	1.000									
RETENT	-,394**	-,426***	,127	1.000								
AGE	,057	-,071	-,012	,049	1.000							
FSIZE	,377***	,094	-,177**	-,271***	,260***	1.000						
AUDITQ	,330***	,267***	-,049	-,531***	-,079	,364***	1.000					
UNDWR	,197**	,028	-,053	-,251***	-,178**	,260***	,356***	1.000				
LEV	-,119	-,051	-,091	,147*	-,089	-,156*	-,127	-,049	1.000			
MARK	,078	,047	,092	-,195**	,109	,268***	,380***	,278***	- ,180**	1.000		
AC	,302***	,229***	-,380***	-,272***	,136	,486***	,269***	,068	-,042	-,173**	1.000	
OSIZE	,370***	,311***	-,183**	-,585***	,150*	,609***	,677***	,415***	-,172*	,498***	,467***	1.000

* The correlation is significant at the 0.1 level.

** The correlation is significant at the 0.05 level.

*** The correlation is significant at the 0.01 level.

The Table 4 provides the results of multivariate regression relied on to test the hypothesized relationship. Underpricing is regressed on the board attributes as well as control variables. The explanatory power of all the tested regressions is considered as acceptable given that the adjusted R-square seems to be satisfactory (the adjusted R-square for the regression is 0.2083). Furthermore, the statistics of Fisher (F) is significant at the level of 1 %. Therefore, the global significance of the tested models is proved.

Table 4: Multivariate regression explaining underpricing by board attributes

Independent variables	Dependent variable: UNDP RIC			
	Expected signs	Coef.	t	P> t
BSIZE	(+)	.0100553	2.15	0.033
INDEAD	(-)	-.0559568	-1.68	0.096
DUALITY	(+)	-.0016169	-0.06	0.952
AC	(-)	.008513	0.16	0.870
AUDITQ	(-)	.0349062	1.59	0.114
RETENT	(-)	.000198	0.50	0.617
AGE	(-)	.0012288	1.60	0.113
FSIZE	(-)	-.0006788	-0.06	0.956
UNDWR	(-)	.0232729	1.08	0.281
LEV	?	.0437248	1.77	0.079
MARK	?	.0084715	0.61	0.540
OSIZE	(-)	.0247728	1.34	0.181
_CONS		-.1562912	-1.24	0.217

N = 130; F = 3.83; P = 0.0001; R-squared = 0.2820; Adj R-squared = 0.2083

- UNDP RIC: represents the level of underpricing. It equals to $(P_1 - P_0) / P_1$
- BSIZE: The total number of directors on the board
- INDEAD: The proportion of independent directors on the board
- DUALITY: Categorical variable that equals 1 if the CEO is also the chairman and 0 otherwise
- AUDITQ: Categorical variable that equals to 1 if one of the auditors at the time of the IPO is one of a Big 5 firm, and 0 otherwise.
- RETENT: Percentage of ownership retained by the founders, the managers, and their families after IPO
- AGE: Number of years from the foundation to the IPO
- FSIZE: The natural log of pre-IPO total assets
- UNDWR: Categorical variable that equals to 1 if the underwriter at the time of the IPO is one of the following banks: CREDIT LYONNAIS, CREDIT AGRICOLE, BNP, BANQUE POPULAIRE, and 0 otherwise.
- LEV: Book value of total divided by book value of total assets.
- MARK: Categorical variable which equals 1 if the firm initially lists on the "Marché Libre", 2 if the firm initially lists on the "Nouveau Marché", 3 if the firm initially lists on the "Second Marché", 4 if the firm initially lists on the "Premier Marché".
- AC: Categorical variable that equals to 1 if the firm has an audit committee at the time of the IPO and 0 otherwise.
- OSIZE: The natural log of gross proceeds

As expected, the OLS results reported in the Table 4 show that the coefficient on board size (BSIZE) is positive (.0100553) and significant ($p < .05$). Thus board size has a positive and significant effect on the level of underpricing. This supports our hypothesis that IPO firms with smaller board experience lower level of underpricing. The hypothesis 1 is then supported. Thus, the choice of smaller board can reduce investors' ex ante uncertainty with regard to firm value, and positively affects the pricing of the issue.

To examine whether the relationship between board size and underpricing is non-linear, I add a board size squared variable to the model (1). I notice that the coefficient for this variable is not significant¹. The lack of significance leads to the conclusion that there is no non-linear relationship between board size and underpricing.

The results of the Table 4 show that the proportion of independent directors is negatively and significantly associated with underpricing. More specifically and as expected, the coefficient on INDEAD is negative and significant ($\beta_2 = -.0559568$, $p < 0.1$). The hypothesis 2 is then supported. This suggests that IPO firms with higher proportion of independent directors experience lower level of underpricing. Therefore, the choice of independent board members facilitates the reduction of investors' ex ante uncertainty at the time of IPO and positively affects the pricing of the issue.

Contrary to our expectations, CEO duality seems, according to the table 4, that it has no significant impact on IPO underpricing in France. The lack of significance leads to the conclusion that the hypothesis 3 is not supported. Thus, the leadership structure does not reduce investors' ex ante uncertainty at the time of IPO in France. A possible explanation for the insignificant relationship between board leadership structure and underpricing may involve our firm sample. In fact, at 88.5 percent of IPO French firms, in our sample, the CEO is also the chairman of the board. With such little variance in this exogenous variable, then, an insignificant relationship is not surprising.

Similarly, the variable existence of an audit committee at the time of IPO has no significant impact on underpricing of French IPOs ($p = 0.870$). Thus, the hypothesis H4 is not supported. In fact, I expect that the creation of an audit committee at the time of IPO is crucial and I suggest a negative relationship between existence of an audit committee and underpricing. This result is consistent with the notion that it is not the mere existence of an audit committee that reduces investors' ex-ante uncertainty, but its quality that matters. Another possible explanation for the insignificant relationship between existence of audit committee and underpricing may involve our firm sample. Indeed, only 4.6 percent of the firms in our sample have an audit committee at the time of IPO. With such little variance in this exogenous variable, then, an insignificant relationship is not surprising.

Regarding the control variables, from the table, the coefficient on the variable LEV is positive and significant. This suggests that firms with high leverage are associated with higher level of underpricing. In theory, a higher financial leverage ratio makes earnings more volatile and increases the probability that a firm will be unable to meet the required interest payments and will default on the debt. Therefore, a higher proportion of financial leverage ratio indicates greater financial risk, thereby increasing underpricing.

To examine whether the relationship between financial leverage and underpricing is non-linear, I add a financial leverage squared variable to the model (1)². I notice that the

¹ The results are not reported here

² The results are not reported here

coefficient for this variable is not significant. Thus, a non-linear relationship between financial leverage and underpricing is not apparent.

The results of the Table 4 show that the offer size has no impact on the underpricing of French IPOs. In fact, contrary to our expectation, the coefficient on the variable OSIZE is positive but not significant. These findings are not consistent with previous empirical studies. Ritter (1984) and Levis (1993) find a negative and significant relationship between the offer size and underpricing. I can explain the positive relationship between offer size and underpricing by the imbalance between the supply and demand of securities in France. It can be assumed that, all other things being equal, for a large size offering, it is hard to find investors willing to acquire securities and the offer will push down the first day price of the securities.

From the Table 4, I notice that ownership retained has no significant effect on the level of underpricing. In fact, the coefficient inherent to the variable RETENT is positive (.000198) and not significant (0.617). Our finding is inconsistent with the signal theory. Indeed, as discussed previously, the signaling theory suggests that higher percentages of ownership retained by insiders serve as a signal to potential investors and correlates negatively with underpricing (Leland and Pyle, 1977; Downes and Heinkel, 1982). Our result, however, is consistent with several empirical studies. Lee et al. (1993) show, on a sample of 266 Australian firms introduced between 1976 and 1989, that the shares retained by the manager increase significantly the level of underpricing. Using 394 French IPOs between 1983 and 1998, Broye (2001) finds a significant and positive relationship between equity retained by the CEO and the level of underpricing. In the same way, Labégorre and Boubakri (2005) demonstrate the same link on a sample of 185 offerings of common stock on the French market between 1984 and 2000.

To our knowledge, few authors have obtained a negative and significant relationship between underpricing and ownership retained by insiders. Beatty (1989) demonstrates this link using a sample of 2215 US IPOs between 1975 and 1984. Moreover, Firth and Smith (1992) show that ownership retained by insiders determines negatively but not significantly the level of underpricing for 89 New Zealand firms.

The positive relationship between ownership retained by insiders and underpricing found in this study is consistent with the stream of research suggesting that some investors might interpret higher proportion of shares retained by insiders as a signal of potential managerial entrenchment.

A possible explanation for the insignificant finding may involve lock-up periods. In fact, although some insiders retain higher proportion of shares at the time of the IPO, they may sell their equity stakes just after the IPO. In that sense, Courteau (1995) shows that the length of the lock-up period can be considered as a signaling mechanism that complements ownership retention. As such, it may be that investors are becoming interested in the both ownership retention and the length of the lock-up period and not in ownership retention alone.

To examine whether the relationship between ownership retained and underpricing is non-linear, I add an ownership retained squared variable to the model (1)³. I notice that the coefficient for this variable is not significant. Thus, a non-linear relationship between ownership retained and underpricing is not evident.

³ The results are not reported here

In respect of the relationship between auditor quality and underpricing of French IPOs, the Table 4 shows that there is no significant relationship between these two variables. Furthermore, I notice that the coefficient on AUDITQ is positive. This finding is contrary to the signaling assumptions advanced by Titman and Trueman (1986) and Beatty (1989). In their model, these authors consider the reputation of the auditor as an effective signal of IPO firm value and suggest a negative relationship between auditor quality and underpricing. Beatty (1989) and Balvers et al. (1988) validate this relationship using US IPO firms; Clarkson et al. (1992) validate it using Canadian IPO firms.

In addition, previous empirical studies using French IPO firms provide mixed evidence on the impact of auditor quality on underpricing: in the works of Labégorre and Boubaker (2005), auditor quality does not reduce significantly IPO underpricing. Nevertheless, this link is identified in the study of Broye (2001).

Similarly, the coefficient on the variable UNDWR is positive but not significant ($p = 0.281$). This suggests that underwriter reputation has no significant influence on underpricing. However, the positive sign of the coefficient on this variable implies that more prestigious underwriters are associated with higher level of underpricing. This is opposite to the signaling theory (Carter and Manaster, 1990; Carter et al., 1998). According to these authors, the prestigious banks, to preserve their reputation, only underwrite low risk and easily assessable IPO firms with the available information. The underwriter reputation reduces, in this context, the ex ante uncertainty about the value of the IPO firms and therefore mitigates the level of underpricing. However, there is a lack of conclusive empirical evidence concerning the relationship between these two variables. In fact, this link has been clearly established in the US market by Beatty and Ritter (1986). In addition, Michaely and Shaw (1994) report that the US IPOs underwritten by more prestigious underwriters exhibit a lower level of underpricing than do IPOs handled by less prestigious underwriters. However, using Japanese IPOs, Beckman et al. (2001) find that underwriter reputation is not related to underpricing.

On the other hand, French IPO studies give also mixed results on the impact of underwriter reputation on underpricing: in the study of Labégorre and Boubaker (2005), the reputation of the underwriter has a negative and significant impact on underpricing. In the study of Broye (1998), the presence of a reputable underwriter does not seem to have an incidence on the valuation of the IPO firm by the financial market.

Our result (positive link between underwriter reputation and underpricing) is, as for it, in compliance with the predictions of Loughran and Ritter (2002 and 2004) in an agency context. According to these authors, prestigious underwriters benefit from their reputation to maximize their fees through higher level of underpricing at IPO.

Turning to the firm age, this variable has a positive and not significant influence on the level of underpricing. So, contrary to our expectation, old firms are associated with more level of underpricing. This is inconsistent with the results obtained by Chemmanur and Fulghieri (1999), Broye (2001) and Broye and Schatt (2003).

In respect of the relationship between firm size and underpricing of French IPOs, there is no significant connection found in this study. This can be explained by the homogeneity of the size of the firms of the sample.

4.3. Robustness tests

In the regressions of the Table 4, the underpricing and board characteristics are supposed exogenous. Yet, the level of underpricing depends, among others, on the offer price which, in addition to the board structure, are chosen by the manager. Then, it becomes important to control for the possible endogeneity between the level of underpricing and board characteristics.

As suggested by Davidson and McKinnon (1993), the general approach used to test for endogeneity is the Durbin-Wu-Hausman (DWH) test. Applied to our case, the Durbin-Wu-Hausman test does not reject the null hypothesis of no endogeneity. I conclude that OLS lead to unbiased and consistent estimates in our sample.

5. CONCLUSION

The initial public offerings are characterized by situations of uncertainty and information asymmetry which lead to underpricing of the securities offered. It is in the interest of the managers of high quality firms to convey their favorable information to obtain a better valuation of firm shares. They can, for this purpose, use credible signaling mechanisms that allow potential investors to estimate the quality of the issue.

Prior empirical evidence suggests that board size, board independence, separation of CEO and chairman functions, and existence of audit committee are significantly related to board quality. In addition, the existing empirical evidence indicates that board quality has a positive association with financial reporting and disclosure quality, and earnings and disclosures of listed firms with higher quality board are perceived as being more informative and relevant by financial markets (investors perceive earnings and disclosures of listed firms to be more informative and relevant (to be of higher quality) when the board is of high quality). I examine whether board of directors can serve as a signal of firm quality and reduce ex ante uncertainty about the value of firm's equity. In other words, our research question is does board quality matter in firm pricing. I use the context of French Initial Public offering to investigate this possibility. I find some supporting results. In fact, our results show that the choice of a properly structured board at the time of IPO has a favorable incidence on IPO underpricing. Specifically, I find that board size has a positive and significant impact on the level of underpricing and board independence has a negative and significant effect on the magnitude of underpricing. However, the association of CEO and chairman position and existence of audit committee have no effect on IPO underpricing. Thus, the choice of a high quality board conveys a positive signal and information about the issuer quality to potential investors, which reduces ex ante uncertainty and thus limits shares discount.

Our finding extends the literature on board quality and on IPOs. In light of the wealth of research on board quality of listed firms, I extend the literature to firms undertaking IPO. I view board of directors as a signal that existing financial reporting and disclosures of the firm pass the due diligence tests by an effective board and thus are of high quality and. Our results are consistent with our hypothesis and I suggest that the advantages associated with high quality board, i.e., smaller board and higher percentage of independent directors will positively signal the credibility of earnings and financial disclosure contained in the

prospectus and reported for potential investors, thereby reducing information asymmetry and mitigating the level of underpricing.

The evidence concerning the fact that board quality matters for securities pricing, presented in this study has two major consequences. The first one is that the board quality may be used by potential investors to assess the true value of the securities and the uncertainty associated with the issue. The second one is, all things being equal; it seems interesting for a high quality to choose an effective board at the time of IPO. Thus, the choice of board structure represents an important strategic decision of the managers.

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